

**Patent claims**

1. A cylinder for a twin-screw extruder, where the cylinder (1) surrounds a twin screw of the extruder, forming an extrusion space (2) and is in turn surrounded by a hollow-cylinder mantle (10), which has a smooth inner surface, where on the outside of the cylinder (1) at least one channel (3) is made in the shape of a screw line in the longitudinal direction of the cylinder (1), which can be connected to an intake and outlet (12, 13) for a tempering medium that is capable of flowing, and can be closed, at least over part of the circumference of the cylinder (1), in the radial direction by the hollow-cylinder mantle (10), characterized by the fact that the channel(s) (3) are made in the cylinder (1) by a winding-vortex process and the channel(s) (3) are closed by the hollow-cylinder mantle (10), that the cycle depth of the channel(s) (3) in the radial direction changes over the circumference of the cylinder (1) in such a way that it is greatest in regions where the original wall thickness of the cylinder (1) is greatest, and that it is smallest in the regions where the original wall thickness of the cylinder (1) is also smallest.

2. A cylinder according to claim 1,  
characterized by the fact  
that for a winding of several cycles, several channels  
(3) are provided, especially three or four adjacent  
channels (3).
3. A cylinder according to one of claims 1-2,  
characterized by the fact  
that the pitch of the individual windings in the  
channel(s) (3) is constant in the longitudinal direction  
of the cylinder (1).
4. A cylinder according to one of claims 1-3,  
characterized by the fact  
that the channel(s) (3) has/have an essentially  
rectangular cross-section.
5. A cylinder according to one of claims 1-4,  
characterized by the fact  
that the width of the channel(s) (3) in the longitudinal  
direction (1) is 0.7 to 1.2 times the thickness of the  
bridge (4) between each pair of directly adjacent  
windings of the channel(s) (3).
6. A cylinder according to one of claims 1-5,  
characterized by the fact

that the greatest cycle depth is about 3 to 5 times, especially about 4 times the smallest cycle depth.

7. A cylinder according to one of claims 1-3 or 5-6, characterized by the fact that the width of the channel(s) (3) expands in the radial direction toward the outside.
8. A cylinder according to claim 7, characterized by the fact that the side surfaces (5, 6) of the channel(s) (3) include an angle ( $\alpha$ ) in the range of 8-15°, especially an angle of about 10°.
9. A cylinder according to one of claims 1-8, characterized by the fact that the average thickness of the bridges (4) between two directly adjacent windings of the channel(s) (3) is 1.5 to 4, especially 2.5 times the average width of the channel(s) (3).
10. A cylinder according to one of claims 1-9, characterized by the fact that the channels (3) in the region near the front end of the cylinder (1) each open into circumferential grooves (7, 8) and the connections for the intake and outlet (12, 13) of the tempering

medium each open into one of the two grooves (7, 8), on  
the hollow-cylinder mantle (10).

add A<sup>17</sup> →